

Atty. Docket No. 020732.000440

REMARKS**RECEIVED
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The pending claims are claims 2, 3, 7, 11, 13 and 17-28.

Amendment to the Claims

Support for the amendment to claim 11 (and new claims 23-26) can be found throughout the specification and claims as originally filed at, for example, page 2, line 21 through page 3, line 8; Figures 1 and 2, page 4, lines 15-21, and original claims 1-7.

Claims 4, 6, 12, 15 and 16 have been cancelled without prejudice.

Claims 13 and 19 have been amended to correct dependency.

Support for new claim 20 can be found impliedly throughout the specification, for example page 6, lines 1-8. Support for new claims 21 and 22 can be found on page 5, lines 4-13. Support for new claims 27 and 28 can be found in original claims 13 and 21 as filed.

No new matter has been added.

Rejection of Claims on Reference Grounds, and Transversal Thereof

In the August 23, 2007 Office Action:

claims 2-3, 6 and 11 were rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Lapluye *et al.* (U.S. Patent No. 5,156,892);

claims 12-13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Lapluye *et al.* (U.S. Patent No. 5,156,892);

claims 4, 7 and 15-18 were rejected under 35 U.S.C. §103(a) as being unpatentable over Lapluye *et al.* in view of Tadashi *et al.* (U.S. Patent No. JP 59-083913); and

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claim 9 was rejected under 35 U.S.C. §103(a) as being unpatentable over Lapluye *et al.* in view of Slyke *et al.* (U.S. Patent No. 3,819,817).

These rejections are respectfully traversed. The patentable distinctions of the pending claims over the cited references are set out in the ensuing discussion.

Rejection of Claims 2-3, 6 and 11 Under 35 U.S.C. §102(b)

In the August 23, 2007 Office Action, claims 2-3, 6 and 11 were rejected under 35 U.S.C. §102(b) as being anticipated by Lapluye *et al.* (U.S. Patent No. 5,156,892, hereinafter "Lapluye"). Specifically, the Examiner asserts:

"Lapluye teaches applying a corrosion inhibiting solution to metal surfaces to for a protective coating (col. 1 lines 6-9 and col. 1 line 64 – col. 2 line 6). To test the effectiveness of the protective coating, Lapluye further teaches exposing treated and untreated metal surfaces to an atmosphere containing hydrogen sulfide and observe for metal surface color change (col. 3 lines 15-17). According to Lapluye, the untreated copper plate changes color entirely after 1 minute and the treated copper plate starts to change color after 132 minutes (col. 3 lines 21-23). Lapluye further teaches that the metal surfaces are first scoured by a treatment with chromic acid and rinsed with tap water and distilled water prior to the surface treatment (col. 2 lines 54-57)" (see Office Action dated 8/23/07 at page 3, lines 7-15).

Applicants respectfully traverse this rejection.

Applicants have amended claim 11 to recite:

"A method of detecting the presence of a corrosion inhibitor on a microelectronic device having an exposed copper surface, said method comprising comprising:

(a) cleaning said microelectronic device having an exposed copper surface and a sacrificial copper coupon with a cleaning solution comprising a corrosion inhibitor;

(b) rinsing said microelectronic device having an exposed copper surface and said sacrificial copper coupon with a rinsing solution; and

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(c) exposing only said sacrificial copper coupon to an indicating reactant, wherein said exposure results in a visible color change to said sacrificial copper coupon within a predetermined time if said corrosion inhibitor has been removed from the copper coupon.”

It can be seen that both the microelectronic device having an exposed copper surface and the sacrificial copper coupon are cleaned with a solution containing a corrosion inhibitor and rinsed, but only the sacrificial copper coupon is exposed to the indicating reagent.

In contrast, Lapluye teaches the exposure of a piece of metal to a protective composition followed by exposure of said metal to an atmosphere containing H₂S. There is no teaching or suggestion that a microelectronic device having an exposed copper surface and a sacrificial copper coupon are exposed to the “protective composition” followed by the exposure of only the sacrificial copper coupon to the H₂S.

It is well established, as a matter of law, that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). Clearly, Lapluye does not satisfy this standard.

Accordingly, Lapluye does not anticipate applicants’ claim 11, or claims depending therefrom. Withdrawal of the rejection of claims 2-3, 6 and 11 as being anticipated by Lapluye is respectfully requested.

Rejections under 35 U.S.C. §103(a)

1. In the August, 23, 2007 Office Action, claims 2-3, 6 and 11-13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Lapluye (U.S. Patent No. 5,156,892). Applicants traverse such rejection.

In order to establish a *prima facie* case showing obviousness over the prior art, the Examiner must show the following three elements: (1) a suggestion or motivation to combine or modify

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the cited the cited references;¹ (2) a reasonable expectation of success; and (3) that the combination or modification of the prior art references teaches all of the limitations of the claims at issue. Failure to show any one of the foregoing negates a *prima facie* showing. The initial burden is on the Examiner to provide some suggestion of the desirability of doing what the inventor has done. M.P.E.P. §2142 *et seq.*

As introduced hereinabove, Lapluye does not teach or suggest the inclusion of a sacrificial copper coupon as required in Applicants' claim 11, and thus one of the requirements needed to establish a *prima facie* case of obviousness, has not been met. See, *In re Royka*, 180 USPQ 580 (CCPA 1974).

Moreover, the intended purpose of Lapluye is drastically different from that of the claimed invention, and thus one skilled in the art would not have been motivated to utilize the Lapluye reference to achieve the presently claimed invention. The intended purpose of Lapluye is to *deposit and maintain* a protective coating on metal surfaces and as such, upon exposure to H₂S no color change should be observed, which is indicative of the desired, protected metal surface. Importantly, because the intent is to have a protected metal surface, the metal surface of Lapluye will not undergo any chemical reaction with the H₂S.

The teaching in Lapluye is in direct contrast to what is presently claimed herein. The intended purpose of the present invention is to determine whether or not the corrosive coating *has been removed* from a microelectronic device having an exposed copper surface, with the preference that removal has occurred. If a microelectronic device having exposed copper surfaces and removed corrosion inhibitor were to be exposed to the H₂S, the *unprotected*, exposed copper would undergo a chemical reaction with the H₂S. This is disadvantageous because a microelectronic device having said exposed copper surfaces will be sacrificed, at great expense to the manufacturer. In order to ensure that the expensive microelectronic devices are not exposed to H₂S, sacrificial copper coupons are exposed to the corrosion inhibitor and rinsed like

¹ It is noted that subsequent to the recent Supreme Court decision in *KSR Int'l Co. v. Teleflex, Inc.*, No. 04-1350 (U.S. 2007), the USPTO issued a memorandum that stated that "the Court did not totally reject the use of 'teaching, suggestion, or motivation' as a factor in the obviousness analysis" and that "in formulating a rejection using 35 U.S.C. §103(a) based upon a combination of prior art elements, it remains necessary to identify the reason why a person of ordinary skill in the art would have combined the prior art elements in the manner claimed" (emphasis in original).

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the microelectronic device, but only the sacrificial copper coupon is exposed to the indicating reagent.

Considered *in toto*, Lapluye does not motivate, teach or suggest a microelectronic device having an exposed copper surface that is not to be exposed to the indicating reagent, since such exposure will leave a chemically modified copper surface, thus rendering said exposed copper surface incompatible with subsequent manufacturing steps. Furthermore, Lapluye does not motivate, teach or suggest the use of sacrificial copper coupons to detect if all corrosive material has been removed from all of the exposed copper surfaces of the microelectronic devices. These critical features are not motivated, taught or suggested by the Lapluye reference.

Accordingly, Applicants respectfully submit that the instant claims are non-obvious in view of the cited art. Applicants respectfully request the Patent Office withdraw its rejections to instant claims 2-3, 6 and 11-13 as being obvious in view of Lapluye.

2. In the August 23, 2007 Office Action, claims 4, 7 and 15-18 were rejected under 35 U.S.C. §103(a) as being unpatentable over Lapluye et al. in view of Tadashi (Japanese Application No. JP 59-083913, hereinafter Tadashi). Applicants traverse such rejection.

The Examiner states:

“Regarding claims 4, 7 and 15-18, it would have been obvious to one of ordinary skill in the art to have incorporated the hydrogen sulfide generator of Tadashi into the process of Lapluye in order to provide sufficient hydrogen sulfide gas to the process of Lapluye to achieve proper corrosion inhibitor testing” (see, *e.g.*, Office Action date 8/23/07 at page 5, lines 17-22).

As discussed hereinabove, Lapluye does not make obvious applicants' claimed invention. The inclusion of Tadashi does not cure this deficiency. Indeed, Tadashi has been added by the examiner solely as a method of generating H₂S gas. As such, applicants' claimed invention remains non-obvious in view of Lapluye and Tadashi.

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Accordingly, applicants respectfully request withdrawal of the rejection of claims 4, 7 and 15-18 under §103 in view of Lapluye and Tadashi.

3. In the August 23, 2007 Office Action, claim 9 was rejected under 35 U.S.C. §103(a) as being unpatentable over Lapluye in view of Slyke (U.S. Patent No. 3,819,817, hereinafter Slyke). Applicants traverse such rejection.

Applicants submit that claim 9 has been previously withdrawn. As such, Applicants request clarification from the Examiner regarding this rejection.

Assuming that the Examiner is referring to claim 19, as discussed hereinabove, Lapluye does not make obvious applicants' claimed invention. The inclusion of Slyke does not cure this deficiency. Indeed, Slyke has been added by the examiner solely as a method of generating H₂S gas. As such, applicants' claimed invention remains non-obvious in view of Lapluye and Slyke.

Petition for Extension of Time/Fees Payable

Applicants hereby petition for a one (1) month extension of time, extending the deadline for responding to the August 23, 2007 Office Action from November 23, 2007 to December 26, 2007 (December 23, 2007 is a Sunday and the USPTO is closed on December 24 and 25, 2007). As such, the fee of \$120.00 specified in 37 CFR §1.17(a)(1) for such one (1) month extension is due.

Nine (9) claims have been added herein, one (1) of which is independent, and five (5) claims have been cancelled, bringing the total number of claims to twenty (20), three (3) of which are independent. As such, no added claims fee is due.

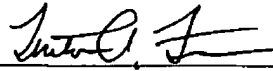
The total fee of \$120.00 is authorized to be withdrawn from Deposit Account No. 13-4365 of Moore & Van Allen PLLC. Authorization is hereby given to charge any deficiency in applicable fees, or credit any overcharges, for this response to Deposit Account No. 13-4365.

Conclusion

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Based on the foregoing, claims 2, 3, 7, 11, 13 and 17-28 are in form and condition for allowance. If any additional issues remain, the Examiner is requested to contact the undersigned attorney at (919) 286-8000 to discuss same.

Respectfully submitted

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